

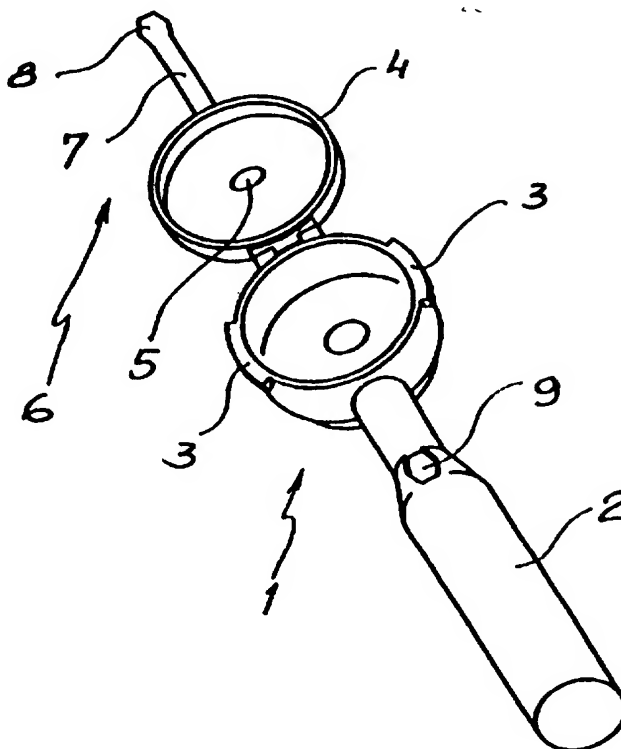


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>A47J 31/06</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 97/43937</b> <b>(43) International Publication Date:</b> 27 November 1997 (27.11.97)
<b>(21) International Application Number:</b> PCT/EP97/02163 <b>(22) International Filing Date:</b> 26 April 1997 (26.04.97) <b>(30) Priority Data:</b> MI96A001025      22 May 1996 (22.05.96)      IT <b>(71) Applicant (for all designated States except US):</b> ILLYCAFFE' S.p.A. [IT/IT]; Via Flavia, 110, I-34147 Trieste (IT). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> ILLY, Andrea [IT/IT]; Illycaffè S.p.A., Via Flavia, 110, I-34147 Trieste (IT). MASTROPASQUA, Luca [IT/IT]; Illycaffè S.p.A., Via Flavia, 110, I-34147 Trieste (IT). <b>(74) Agents:</b> FERRAILOLO, Ruggero et al.; Via Napo Torriani, 10, I-20124 Milano (IT).		<b>(81) Designated States:</b> AU, BR, CA, CN, CZ, HU, JP, KR, MX, RU, SI, SK, US, YU, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i>

**(54) Title:** AN ADAPTOR FOR A PRE-PACKAGED COFFEE DOSE**(57) Abstract**

An adaptor that comprises a dose-holder (1) with a handle (2) that defines a first part of a percolating chamber suited to holding a dose of coffee; a lid (4), associated to the dose-holder, that defines a second part of the percolating chamber, said lid being suited to seal-lock with the lower part of a hot water distributor (23) and bearing an aperture (5) that connects the distributor to the percolating chamber and, moreover, being fitted with a manual means (6, 35) to open and close the lid on the dose-holder.



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## AN ADAPTOR FOR A PRE-PACKAGED COFFEE DOSE

The present invention concerns an adaptor for a pre-packaged coffee dose, more especially an adaptor that allows the use of such dose in a conventional coffee machine; the adaptor allows the application of a percolating chamber suited to holding such a dose onto the machine in order to produce a coffee beverage.

5       Currently and in practice "espresso" coffee machines are of two types:

- conventional ones that use ground coffee to be loosely deposited onto a filter lodged in the percolating chamber;

- those that use pre-packaged coffee doses to be lodged in suitable percolating chambers; such doses are the so-called "pods", that is circular or disc-like packets in which a compressed dose of coffee is contained between two parts of filter-paper, or else  
10       so-called "cartridges" or "capsules" that are generally either cylindrical or conical containers of non water-permeable materials, that are more or less rigid such as plastic or aluminium, possibly provided with a number of holes on two opposite sides to allow water to pass through during the percolation.

15       In order to simplify herein we shall define as - coffee dose - any type of pre-packaged coffee dose and as - coffee - a coffee beverage produced by a coffee machine

It is desirable to be able to use coffee doses also in conventional machines and in fact the applicant holds a patent for an adaptor (see document BE 0 070 403) with which one can use a "pod" in a conventional "espresso" coffee machine. This adaptor presents  
20       drawbacks that can be summarized as follows: i) it is made up by two independent parts: the actual adaptor and the filter-holder for the coffee dose; each must be operated in a sequence by means of separate knobs; ii) it worsens the heat performance of the machine, because it has a considerable mass that absorbs heat, cools the water flowing through it, reduces the heating of the filter-holder, with an overall considerable cooling of the water  
25       and the percolating chamber with negative effects on the coffee; iii) sometimes the pod

sticks to the adaptor after having prepared the coffee, forcing the user to remove it with his fingers from scarcely accessible and hot parts; iv) it requires two fastening structures: an upper male part to be engaged on the conventional machine and a lower female part (normally more costly) in which to fit the pod filter-holder; such structures require  
5 strength and accurate manufacturing and are therefore expensive to realize.

The present invention obviates the above stated drawbacks and, as characterized in the claims, concerns an adaptor that comprises:

a) a dose-holder with a handle in which a first part of a percolating chamber is defined suited to holding a coffee dose and to be engaged in the female connector fitted under  
10 the water distributor of a conventional "espresso" coffee machine;

b) a lid associated to the dose-holder so as to lock and unlock onto the latter and thus define a second part of the percolating chamber, provided with a shape such as to match the lower part of the hot water distributor, seal-lock onto the machine's gasket when the dose-holder is engaged under said distributor, bearing an aperture that allows  
15 communication between said distributor and the top of the percolating chamber and also bearing a manual means to be operated to open and close onto the dose-holder when one intends placing a coffee dose in the percolating chamber before using the machine or to remove said coffee dose after having brewed the coffee.

The adaptor invented features operative, technical and economic advantages:

20 - it offers the opportunity of easily adapting one's conventional coffee machine to produce coffee from a coffee dose and, at the same time, of keeping one's machine ready to produce coffee in one way and the other, that is, using loose ground coffee or a coffee dose; especially, one can provide oneself with a number of these devices, each suited to holding a specific coffee dose, for example "pods" or "capsules" of known kinds or that  
25 will be introduced in the future, so as to be ready to use one's conventional machine with

a variety of different pre-packaged coffee doses; the device is in itself light-weight and does not require special caution with the engagement means to the coffee machine; cleaning of the percolating chamber, generally difficult, is made easy, because the percolating chamber is fully extractable together with the dose-holder and the cleaning  
5 can be directly performed in a sink or dish-washer.

- compared to the above mentioned adaptor, this device is more compact and light, hence the thermal masses, that cause the cooling of the water, are greatly reduced and the heat conduction from the boiler to the dose-holder is improved because the dose-holder has a single connecting structure to the machine, critical and costly workings  
10 being limited to the contact surfaces of the sealing gaskets and to a single male bayonet connector.

The invention will be explained in detail below with examples of embodiment and reference to the drawings in which:

Fig. 1 is a first perspective view,  
15 Figs 2, 3 and 4 are vertical cross-sections,  
Fig. 5 is a plane view,  
Figs 6 and 7 are vertical cross-sections, and  
Fig. 8 is a longitudinal cross-section.

Fig. 1 shows the adaptor as a whole: the dose-holder 1 bearing the handle 2 and the  
20 wings 3 for the bayonet connection to the hot water distributor of the coffee machine of a conventional type, not shown; the lid 4, hinged onto the dose-holder in a diametrically opposite position from the handle 2, has an aperture 5 at its centre that allows the hot water to pass from the machine to the percolating chamber and a means 6 to manually operate the lid; this means 6 is a rod 7 with a lock-pin 8 at its free end and is positioned  
25 so that, having closed the lid onto the dose-holder, the rod and lock-pin are set close to

the upper part of handle 2 and the lock-pin, especially, fits into the hollow 9 in the handle, jutting out laterally so as to allow operation by a finger of the same hand that holds the device.

Fig. 2 shows a part of the adaptor comprising the dose-holder 1 and the lid 4: the dose-holder defines the lower part 10 of the percolating chamber and contains a filter 11 into which a dose of coffee in the form of a pod can be placed; the lid 4 is associated to the dose-holder by means of a sliding hinge 12 and defines the upper part 13 of a percolating chamber; the upper part 14 of the lid fits onto the hot water distributor (not shown) of the machine and the circular rim 15 is pushed against the gasket (16) of the machine (see Fig. 4) in order to ensure hydraulic sealing during the operation of the machine and has a central aperture 5 to allow the hot water from the hot water distributor to pass into the percolating chamber; the gasket 18 ensures hydraulic sealing between the dose-holder and the lid; note that the lower part of the dose-holder is shaped so as to form the seat for the filter 11 in which the pod, not shown, is fitted, and the lower funnel 19 to gather the coffee that issues from the channel 20.

Fig. 3 shows the lid 4 raised above the dose-holder 1, the wing (21) with which the dose-holder locks onto the machine and side 22 of the dose-holder lowered to make easy the positioning of a dose of coffee (not shown) on filter 11 easier. Some of the parts in this figure are not numbered because they are identical to those in Fig. 2.

Fig. 4 shows the adaptor applied to the hot water distributor 23 of a conventional coffee machine; the wings 21 formed in the upper part of the dose-holder 1 lock onto the female bayonet 24 of the machine for which the dose-holder is designed; the hinge (not visible) allows the dose-holder and the lid to open with clearance movement that avoid mechanical interference and enables hydraulic sealing during percolation. The lid 4 defines the ceiling of the percolating chamber and its upper part copies the shape of the

hot water distributor 23 of the machine and its upper margin engages on gasket 16 of machine 23 ensuring hydraulic sealing. Some of the parts in this figure are not numbered because they are identical to those in Fig. 2.

Fig. 5 is a plan showing the lid 4 open on dose-holder 1; note the position of the hinge 12 that is not diametrically opposite to the handle. Some of the parts in this figure are not numbered because they are identical to those in Fig. 1.

Fig. 6 shows an adaptor in which a percolating chamber 25 is defined which is suited to receiving a coffee dose (not shown) in the shape of a cylindrical capsule in a perfectly sealed package, that has holes for the passage of water in the upper and lower circular walls that is received in a cylindrical small tank 26; the space 27 between the top of the small tank and the lower part of the lid 4 and the annular fitting 28 in said lower part, contain the upper circular rim of the capsule; the hot water passes from the hot water distributor 23 of the machine to the capsule through aperture 5 of lid 4 and exits through holes 29 made in the bottom of the small tank. Some of the parts in this figure are not numbered because they are identical to those in Fig. 2.

Fig. 7 shows an adaptor in which a percolating chamber 30 comprises a receptacle 30/A suited to holding a coffee dose (not shown) in the form of a capsule that is sensibly a frustum in a perfectly sealed package. The lid 4 of the adaptor comprises a nozzle-perforator device 31, on top of the receptacle 30/A, suited to perforating the top of the capsule held in the chamber in order to allow the hot water to pass inside the capsule, while the number of reliefs 32 solid with plate 33 penetrate the membrane of the capsule providing passages for the coffee percolated. Within space 34, between the lower annular rim of chamber 30 and the plane of reliefs 32 the rim of the capsule is clamped to seal. Some of the parts in this figure are not numbered because they are identical to those in Fig. 2 and 4.

Fig. 8 shows an opening and closing means 35 for lid 4, raised above the dose-holder 1, that comprises: a rod-button 36 that can rotate around its fulcrum f1 according to arrow F; a leverage 37 comprising levers L1, L2 and L3 and swivels S1, S2, S3, and S4; a guide-slot 38; a bracket 39 and a return spring 40; said lid 4 is fitted to bracket 39 and in turn hinged to dose-holder 1 in a position diametrically opposite to handle 2, by means of a hinge 41; this bracket 39 is connected to the rod-button 36 by means of said leverage 37; the lid 4 is raised above the dose-holder by exerting a pressure on the rod-button 36 also with the same hand that holds the handle 2; the return spring 40, associated to hinge 41, recalls the rod-button 36, when released, into a substantially vertical rest position in order to keep the lid 4 closed upon the dose-holder 1; the longitudinal sliding of levers L2 and L3 takes place within handle 2 and slot 38 that guides its movement; the slot 38 is associated below the dose-holder between a first and a second channel for the flow of coffee. Some of the parts in this figure are not numbered because they are identical to those in Fig. 2.



## Claims

1. An adaptor for a pre-packaged dose of coffee that may be engaged under the hot water distributor (23) of a conventional "espresso" coffee machine in order to produce a coffee beverage characterized in that it comprises: a) a dose-holder (1) with a handle (2) in which a first part of a percolating chamber is defined which is suited to holding a pre-packaged dose of coffee that may be engaged under a hot water distributor (23); b) a lid (4) associated to the dose-holder (1) in order to open and close upon the latter and thus define a second part of the percolating chamber, provided with a shape such as to match the lower part of the hot water distributor (23) in order to seal lock together with the gasket (16) on the machine when the dose-holder is engaged under the latter, and bearing an aperture (5) that sets said distributor (23) in communication with the percolating chamber and also bearing a means (6, 35) that can be manually operated to open and close the lid onto the dose-holder.

2. An adaptor according to claim 1 characterized in that the lid (4) is hinged onto the dose-holder (1).

3. An adaptor according to claims 1 and 2 characterized in that the means (35) that can be manually operated to open and close the lid (4) is such as to allow the operator to open the lid also with the same hand with which the handle (2) of the dose-holder (1) is held by way of acting upon a means (36) set on the same handle that, by way of a leverage (37), causes the rotation of a joint device (39) hinged onto the dose-holder (1), by means of the hinge (41), and fixed to the lid (4) that is thus raised; when said means (36) is released, an elastic means (40), associated to the hinge (41), recalls and keeps the lid closed upon the dose-holder (1).

4. An adaptor according to claim 3 characterized in that the means (36) is a rod-button that may rotate around its fulcrum (f1) in order to operate said leverage (37) that

slides longitudinally within the handle (2) and a guide slot (38) to guide it, said guide being associated under the dose-holder and, moreover, characterized in that said elastic means (40) is a return spring suited to recalling and keeping the lid (4) in a closed position on the dose-holder (1).

5        5. An adaptor according to claims 1 and 2 characterized in that the means (6) to be manually operated to open and close the lid (4) is adjacent to handle (2) of the dose-holder (1) when the lid is in its closed position.

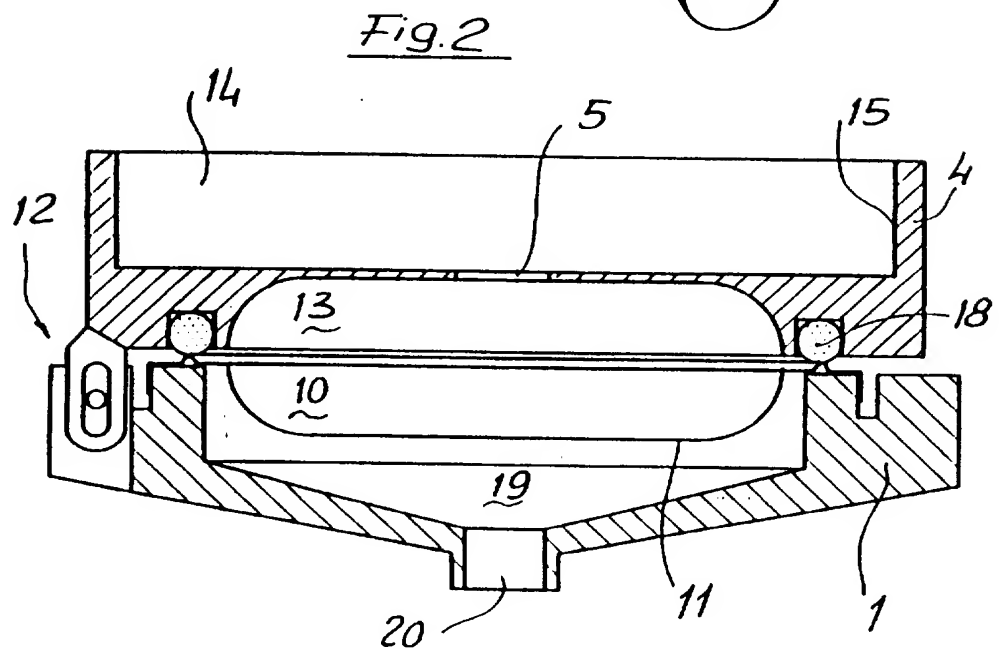
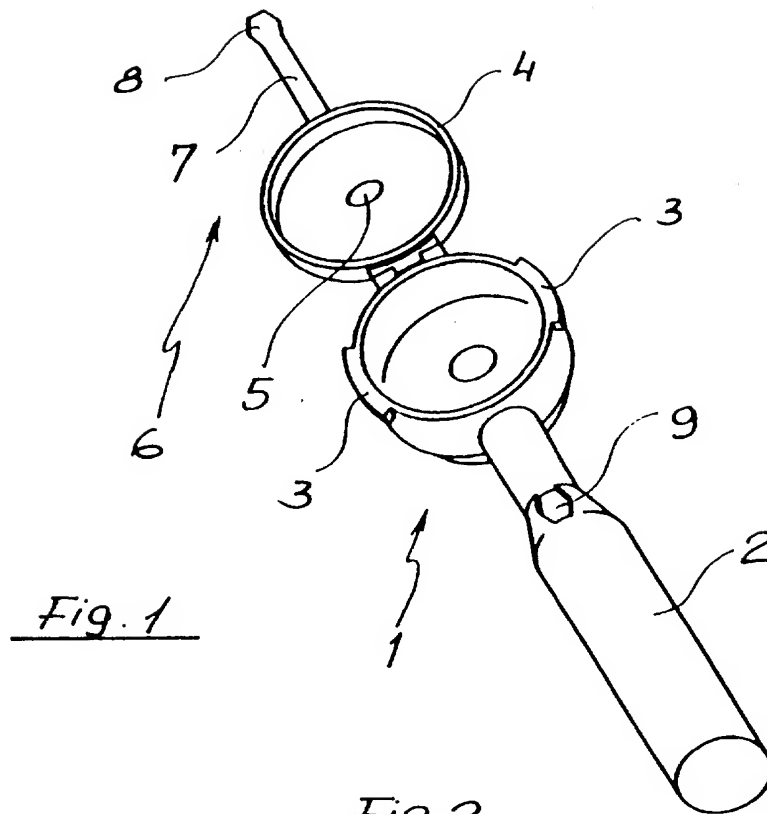
6. An adaptor according to claims from 1 to 5 characterized in that the percolating chamber is shaped so as to hold a dose of coffee in the form of a disc-like packet in  
10        which the coffee dose is held between two sheets of water permeable paper.

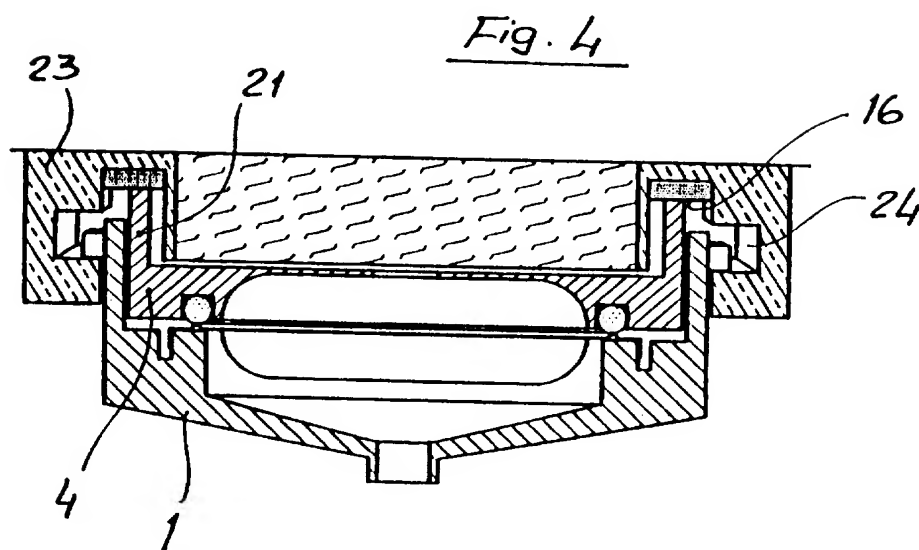
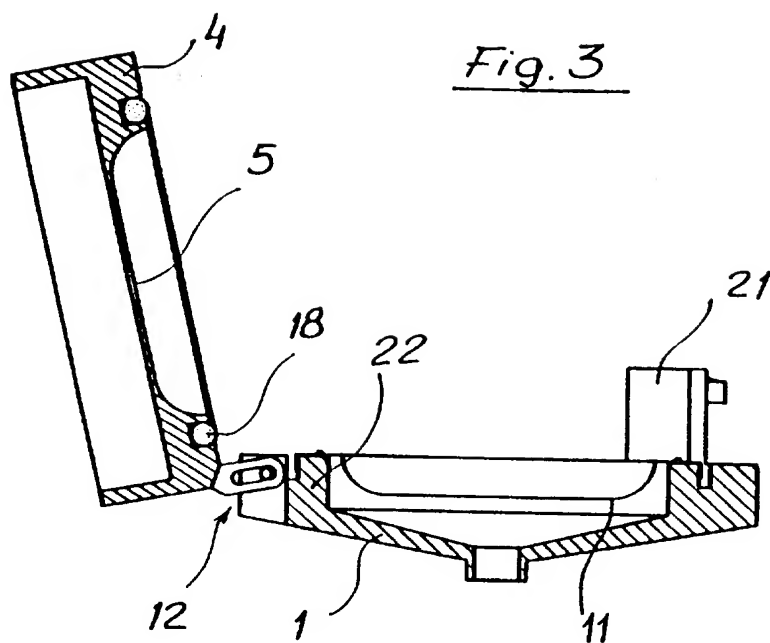
7. An adaptor according to claims from 1 to 5 characterized in that the percolating chamber is shaped so as to hold a dose of coffee packaged in a container made of non water permeable material.

8. An adaptor according to claim 7 characterized in that the percolating chamber is  
15        shaped so as to hold a dose of coffee of which the upper and lower surfaces are made of a film of material that may be perforated by means set above and below the brewing chamber.

9. An adaptor according to claim 7 characterized in that the percolating chamber is shaped so as to hold a dose of coffee that is sensibly cylindrical and in which the two  
20        opposite circular walls both bear a number of holes for the passage of hot water.

10. An adaptor according to claim 7 characterized in that the percolating chamber is shaped so as to hold a dose of coffee that is sensibly frustum shaped and in which the two opposite circular walls both bear a number of holes for the passage of hot water.





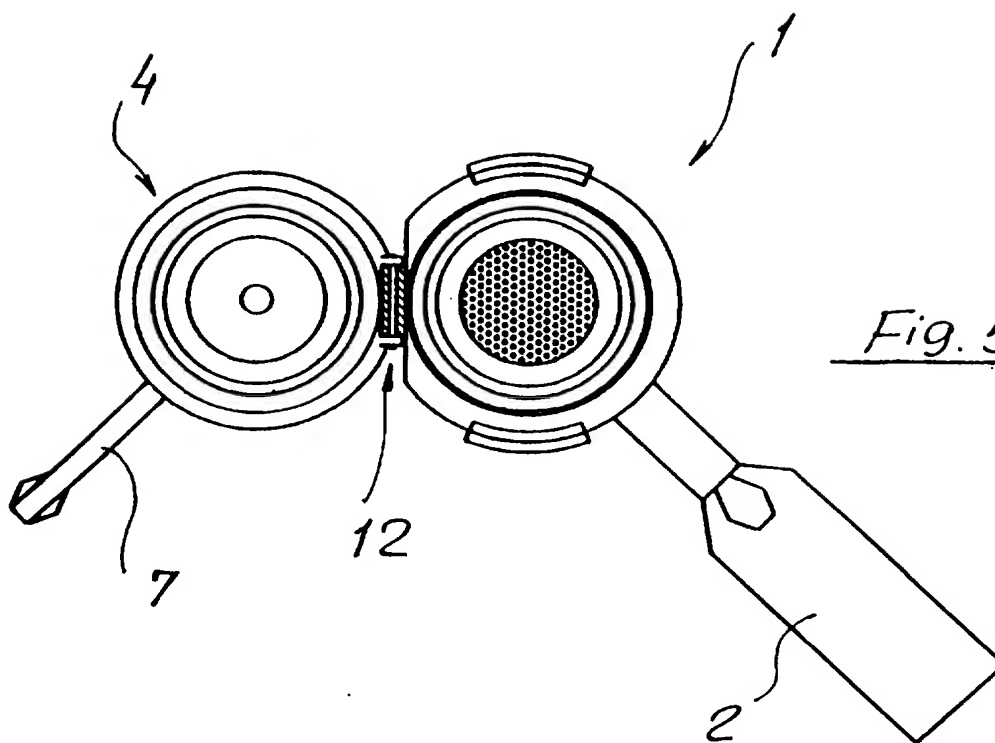
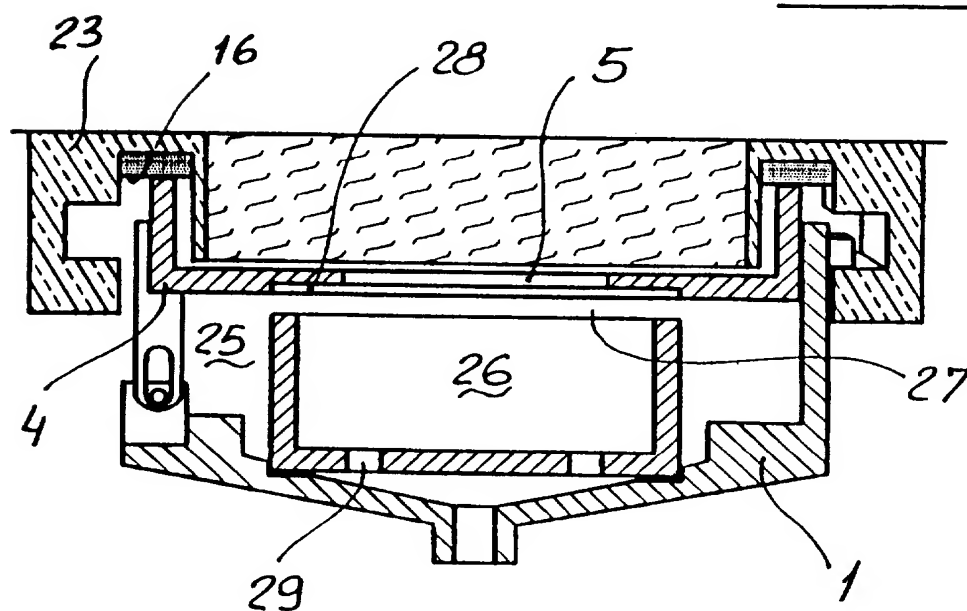
Fig. 5Fig. 6

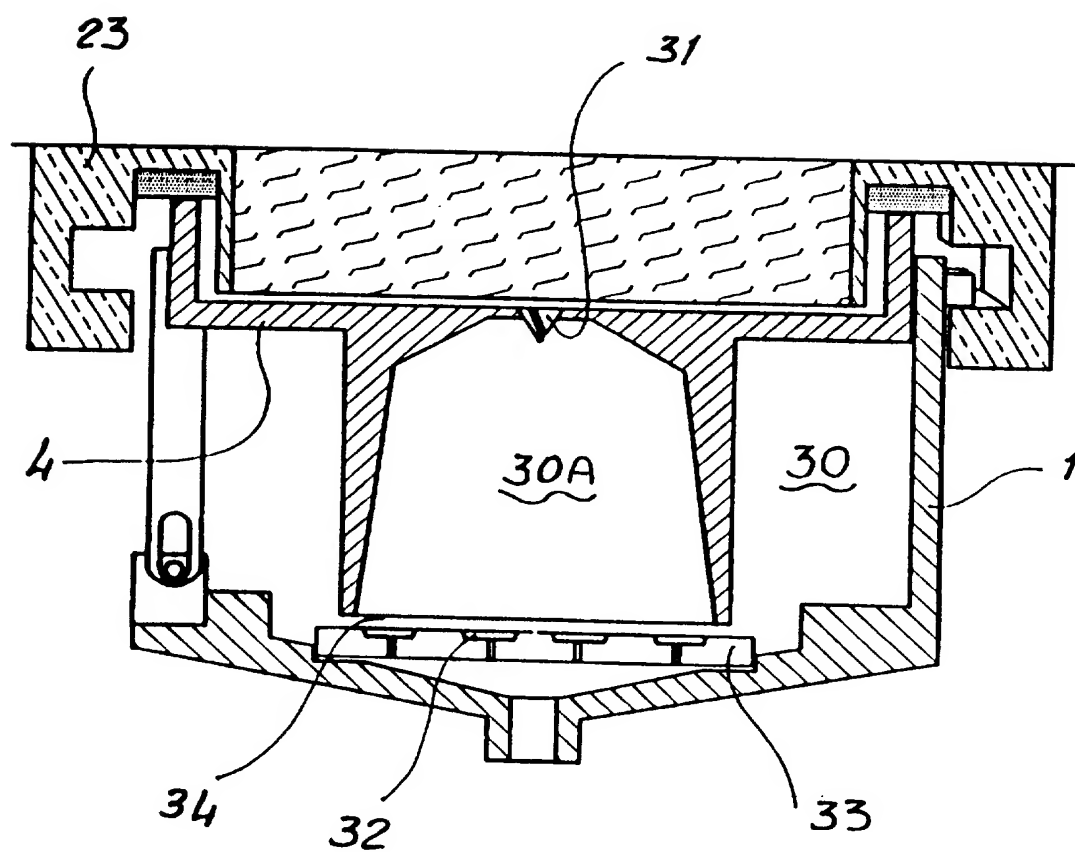
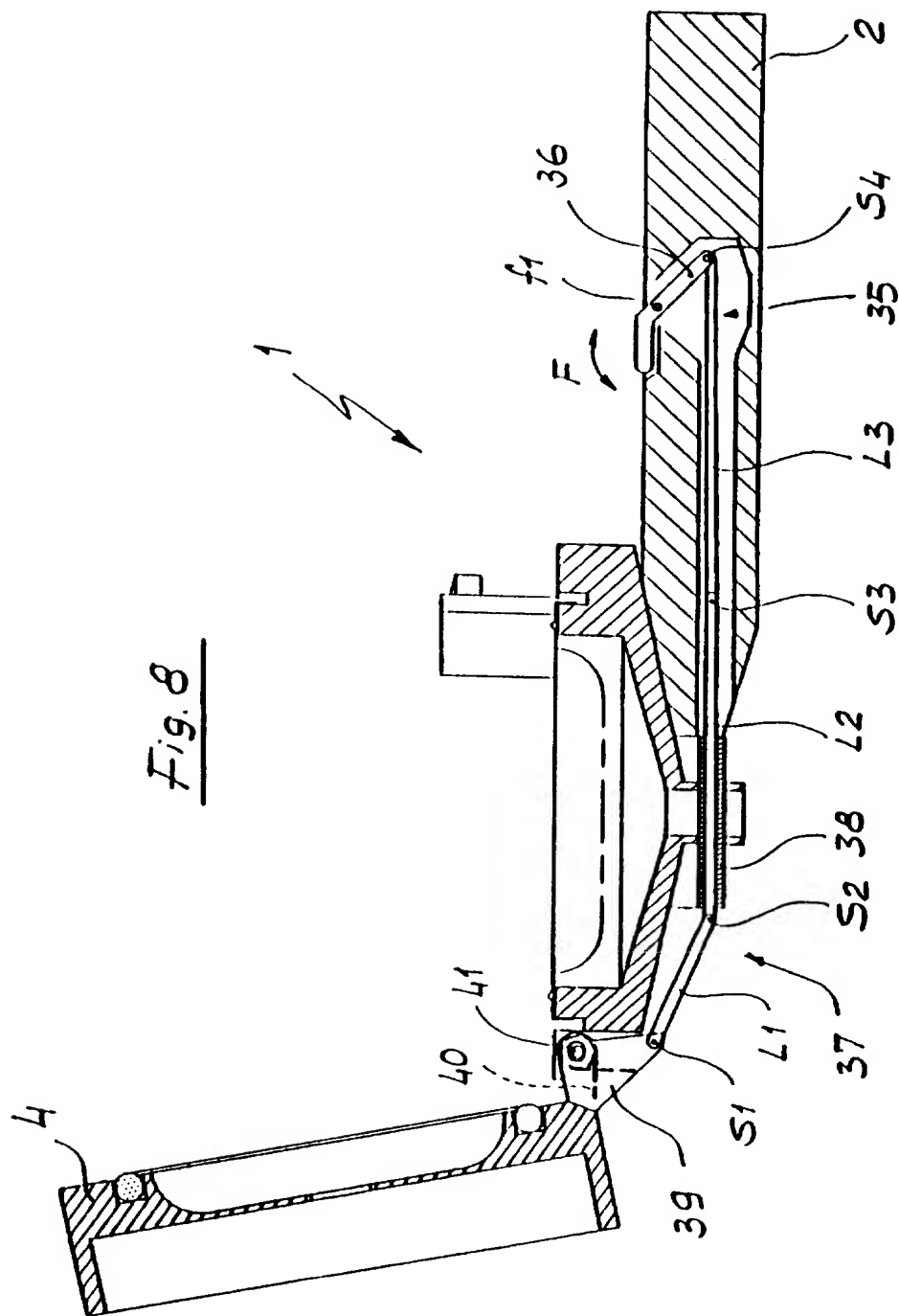
Fig. 7

Fig. 8



## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 97/02163

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A47J31/06

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## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A47J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 521 188 A (SOCIETE DES PRODUITS NESTLE) 7 January 1993 see the whole document	1-3,5, 7-10
Y	---	4
Y	EP 0 097 129 A (CAVALLI ALFREDO) 28 December 1983 see abstract; figures	4
X	---	
X	WO 94 02059 A (SOCIETE DES PRODUITS NESTLE S.A.) 3 February 1994 see page 12, line 16 - line 21; figures	1
X	---	
X	EP 0 070 403 A (ILLYCAFFE) 26 January 1983 cited in the application	1
A	see page 3, line 14 - page 4, column 26; figures	6
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No  
PCT/EP 97/02163

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 521188 A	07-01-93	AT 129617 T AU 659644 B AU 1841092 A CA 2072263 A DE 69114278 D DE 69114278 T ES 2080196 T FI 97858 B JP 5192247 A NZ 243241 A US 5398595 A	15-11-95 25-05-95 07-01-93 06-01-93 07-12-95 27-06-96 01-02-96 29-11-96 03-08-93 26-07-94 21-03-95
EP 97129 A	28-12-83	CA 1210948 A US 4497243 A	09-09-86 05-02-85
WO 9402059 A	03-02-94	AU 671650 B AU 4414893 A BR 9305586 A CA 2111990 A EP 0604615 A FI 941256 A JP 6511182 T NO 940248 A NZ 253663 A	05-09-96 14-02-94 02-05-95 03-02-94 06-07-94 17-03-94 15-12-94 03-02-94 28-05-96
EP 70403 A	26-01-83	CA 1184772 A US 4429623 A	02-04-85 07-02-84
DE 573054 C		NONE	